UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,287	03/24/2004	Michael S.Y. Wong	ATH-0069-1P	6055

30547 7590 09/10/2007

BEVER HOFFMAN & HARMS, LLP
2099 GATEWAY PLACE
SUITE 320
SAN JOSE, CA 95110

EXAMINER	
PEREZ, JULIO R	

ART UNIT	PAPER NUMBER
2617	

MAIL DATE	DELIVERY MODE
09/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/809,287	WONG ET AL.	
	Examiner	Art Unit	
	Julio R. Perez	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-23 and 25-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2,4,5,8-11,13-15,17-23, 25,26,29-32,34-36,38 and 39* is/are rejected.

7)☒ Claim(s) *6,7,12,16,27,28,33 and 37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 25, 26, are objected to because of the following informalities:

Regarding claims 25, 26, on lines 1-2, "Claim 24" should be changed to -- Claim 22 --. Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 22-23, 25-39 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 22 lacks the proper preamble necessary for a statutory computer program product claim. See MEP 2100 for guidance on computer related inventions. The examiner suggests a preamble as follows: "A computer readable medium encoded with instructions capable of being executed by a computer for determining ....."

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-5, 8-11, 13, 14, 15, 17,18, 22-26, 29-32, 34-36, 38-39, are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's submission of prior art Sindhushayana et al. (US006760313) in view of applicant's submission of prior art Vogel (US006985437).

Regarding claims 1, 22, Sindhushayana discloses a method of determining a transmission rate (TxRate) for a WLAN transmitter, the method including: determining one or more valid data rates, wherein a valid data rate has an RSSI threshold less than or equal to the lookup RSSI (col. 11, lines 16-32. Note that col. 11, lines 25-32 teaches selecting data rates based on the SINR received, which reads on determining valid data rates); computing an achievable user throughput for each valid data rate based on a theoretical rate and 1 minus a packet error rate (col. 6, lines 59-67, col. 7, lines 1-16, 36-41, col. 10, 64-67, col. 11, lines 1-32, teach consulting a table of SINRs for selecting an appropriate data rate, which is based on a threshold for correct detection being lower and adjacent to a predicted, i.e., "theoretical", for a given probability of error, which read on the computation of an achievable throughput); and choosing the valid data rate having the highest achievable user throughput as the TxRate (col. 11, lines 5-24; teach the selection of the best data rate at which a PER of packets received will not exceeded the target PER), but is silent on determining a lookup received signal strength indicator from one or more acknowledgement packets on upstream.

Vogel teaches selections of signals based on analyzing feedback signals to include acknowledgements for receiving packets (col. 10, lines 55-65; col. 11, lines 40-

5;col 13, lines 23-30, a upstream evaluation of parameters to include evaluation of SNR in order to accomplish an optimal pay load data rate, i.e., throughput).

It would have been obvious to one of skilled in the art at the time of the invention to modify Sindhushayana to include selecting signal strengths associated to packets to provide the most optimal data rate based on communication conditions.

Regarding claims 3, the combination discloses claim 1, wherein computing the achievable user throughput includes computing a product of the theoretical rate and the 1 minus PER (Sindhushayana, col. 7, lines 36-41, col. 8, lines 29-48).

Regarding claims 4, 25, the combination discloses teaches, further including: determining if a size of a frame to be transmitted is greater than a predetermined value; and if the size is greater, then reducing the lookup RSSI by a predetermined amount before determining valid data rates (Sindhushayana, col. 6, lines 10-29 teach selecting second data rate to optimum data rate wherein transmitting data to destination only at the rate indicated by the most recent message based on frame length).

Regarding claims 5, 26, the combination discloses claim 1, further biasing the lookup RSSI based on age before determining valid data rates, wherein an older lookup RSSI is reduced more than a more recent lookup RSSI (Sindhushayana, col. 9, lines 2-5 teach biases for making decisions for lower throughput to be removed).

Regarding claims 8, 9, 29, 30, the combination discloses claim 1, further including updating a rate control table based on a number of retries to successfully transmit a packet at the TxRate (Sindhushayana, col. 11, 16-32).

Regarding claims I0, 31, the combination discloses claim 1, wherein updating the rate control table is further based on whether the TxRate is a probe rate (Sindhushayana, col. 11, 5-25).

Regarding claims 11, 32, the combination discloses claim 1, wherein if excessive retries are performed, then updating the rate control table includes adjusting the PER and the RSSI threshold of the TxRate (Sindhushayana, col. 11, lines 1-24).

Regarding claims 13, 34, the combination discloses claim 1, wherein if excessive retries are not performed, then updating the rate control table include computing the PER of the TxRate based on the number of retries (Sindhushayana, col. 11, lines 25-49).

Regarding claims 14, 35, the combination discloses claim 1, wherein if the TxRate is a probe rate and has few retries, then resetting the PER of the TxRate; significantly reducing a probe interval; and setting maxRate to the probe rate (Sindhushayana, col. 11, lines 1-42).

Regarding claims 15, 36, the combination discloses claim 1, wherein if the TxRate is not probe rate and has no retries on a predetermined number of packets sent at TxRate, then reducing the RSSI threshold of the TxRate (Sindhushayana, col. 11, lines 1-56).

Regarding claims 17, 38, the combination discloses claim 1, wherein updating the rate control table includes periodically aging values (Sindhushayana, col. 9, lines 2-15).

Regarding claims 18, 39, the combination discloses claim 1, wherein aging values includes: reducing RSSI thresholds by a predetermined amount; and reducing PERs by a predetermined factor (Sindhushayana, col. 9, lines 2-5 teach biases for making decisions for lower throughput to be removed).

6. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's submission of prior art Sindhushayana et al. (US006760313) in view of applicant's submission of prior art Vogel (US006985437).

Regarding claim 19, Sindhushayana discloses a transmission rate for a packet (col. 7, lines 36-38 "upon request from an MS for a packet at a certain rate, the MS detects a request for transmitting packets", where the packet is sent over a channel), the transmission rate being computed based on a received signal strength indicator (RSSI) of one or more packets (col. 11, lines 5-24, teach the selection of the best data rate at which a PER of packets received will not exceeded the target PER), theoretical rate values of the possible data rates, and packet error rates (PERs) of the possible data rates (col. 6, lines 59-67, col. 7, lines 1-16, 36-41, col. 10, 64-67, col. 11, lines 1-32, teach consulting a table of SINRs for selecting an appropriate data rate, which is based on a threshold for correct detection being lower and adjacent to a predicted, i.e., "theoretical", for a given probability of error, which read on the computation of an achievable throughput), but is silent on RSSI thresholds of possible data rates.

Vogel teaches selections of signals based on analyzing feedback signals to include to analyze payload data rate (col. 10, lines 55-65; col. 11, lines 40-5;col 13, lines

23-30, a upstream evaluation of parameters to include evaluation of SNR in order to accomplish an optimal pay load data rate, i.e., throughput).

It would have been obvious to one of skilled in the art at the time of the invention to modify Sindhushayana to include selecting signal strengths associated to packets to provide the most optimal data rate based on communication conditions.

Regarding claim 20, the combination discloses the transmission rate being further computed based on a size of a frame to be transmitted (Sindhushayana, col. 6, lines 10-29 teach selecting second data rate to optimum data rate wherein transmitting data to destination only at the rate indicated by the most recent message based on frame length).

Regarding claim 21, the combination discloses the transmission rate being further computed based on an age of the multiple acknowledgement packets (Sindhushayana, col. 9, lines 2-5 teach biases for making decisions for lower throughput to be removed, which are based as well on expired ACKs).

Allowable Subject Matter

7. Claims 6, 7, 12, 16, 27, 28, 33, 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The cited prior art teaches usage of values of the first and second rates such that a throughput of the HDR system is maximized and the target PER is achieved. On the other hand, the applicant's application teaches transmission rate for determining the optimal data rate witch is

greater than a maximum data rate to include if the TxRtae is greater than the maxrate and determining whether a probe rate is successful in order for resetting the TxRate to one rate higher than the maxRate, and wherein if is not successful, resetting the TxRate to the maxRate. In addition, therein if the TxRate is not a probe rate and the PER is greater than a defined value, ensuring the data rats above the TxRate require higher RSSI thresholds than that of the TxRate and that the data rates below the TxRate require lower RSSI thresholds than the TxRate as well as PERs less than or equal to the PER of the Txrate. These limitations, have not been disclosed, taught, or made obvious over the prior art of record.

Response to Arguments

8. Applicant's arguments with respect to claims 1-2, 4-23, 25-39, have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio R. Perez whose telephone number is (571) 272-7846. The examiner can normally be reached on 10:30 - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William G. Trost can be reached on (571) 272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Julio R Perez
Examiner
Art Unit 2617

9/4/07

JP

WILLIAM TROST
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600